

**Three new species of the genus *Trichotichnus* from Seram Is.,
the Moluccas with a note of distribution
(Coleoptera: Carabidae: Harpalini)**

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セラム島（モルッカ諸島）産ツヤゴモクムシ属の3新種と
その分布について（鞘翅目：オサムシ科：ゴモクムシ族）

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抄録：セラム島からツヤゴモクムシ属の3新種を記載し、かつ2種の未記載種の記録をした。
本属は本島から初めての記録である。

Abstract: Three new species of carabid genus, *Trichotichnus* Morawitz, are described and two undescribed species are recorded from Seram Is. This is the first record of the genus from the island.

Key Words: *Trichotichnus*; Harpalini; Carabidae; Seram Is.; new species; distribution.

There is no record of the genus *Trichotichnus* Morawitz (1863) from Seram Is., the Moluccas. Recently I could examine specimens from the island and found several undescribed harpaline species. In this paper I describe three new species, *Trichotichnus* (*Trichotichnus*) *yorimiyatakei*, *T. (Harpaloxenus) maculipennis*, and *T. (Pseudotrichotichnus) seramensis*, and point out two unidentified species, either of subgenus *Harpaloxenus* and subgenus *Pseudotrichotichnus*. So far known distribution range of each subgenus will be shown from various reliable sources.

Abbreviations of the depositories

OMNHc: the collection of the Osaka Museum of Natural History.

NITOc : the collection of the author.

Method

The specimens were observed in dried condition by binocular microscope under 10 to 80× magnification. The male genitalia were prepared by Canada Balsam and observed by mounted slides.

Length of body: distance between apex of labrum and apices of elytra.

Width of body: maximal transverse distance of body.

Width of head: maximal transverse distance including compound eyes.

Length of pronotum: distance from apical edge to basal edge at the middle.

Width of pronotum: maximal transverse distance between sides.

Length of elytra: distance between the basal border and the apices along the suture.

Width of elytra: maximal transverse distance between sides.

***Trichotichnus (Trichotichnus) yoriomiyatakei* N.Ito, sp. nov.**

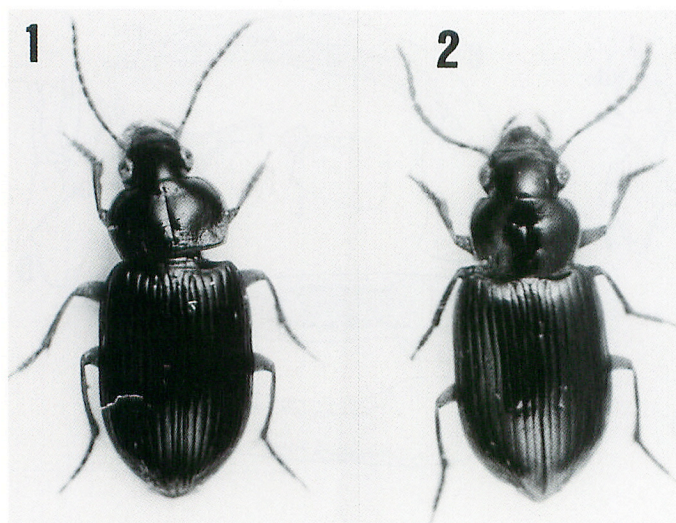
(Figs. 1, 3, 6 and 7)

Body oblong-suboval, rather convex, black, shiny, with iridescent lustre on elytra; palpi, antennae except 2nd and 3rd segments, lateral margins of pronotum, and legs except hind tarsi yellowish to light reddish brown; mandibles, margins of labrum, and lateral margins of elytra reddish brown; 2nd and 3rd antennal segments and hind tarsi blackish brown.

Head gently convex, relatively wide, nearly 2/3 as wide as pronotum, very sparsely and microscopically punctate, with narrow interocular space which is three-fifths of the width of head; labrum subquadrate, shallowly emarginate at apex; clypeus thin, finely rugose near sides, but density of the rugosities variable; clypeal suture fine and shallow throughout; frontal impressions also shallow, straightly divergent behind, and reaching supraorbital grooves; eyes large, more or less prominent, not hemispherical; temples short, steeply oblique towards neck constriction; genuine ventral margin of eye adjoining buccal fissure; mandibles robust, almost pointed at tips, terebral teeth of left and right mandibles gently prominent, retinacular tooth of left mandible weakly protruding and the tooth of right mandible rather strongly produced and rounded at tip; antennae slender, short, and surpassing little pronotal base, 3rd segment sparsely pubescent in apical half, as long as 4th and twice as long as 2nd; labial palpi tumid, 3rd segment two-sevenths longer than 2nd; ligula narrow, weakly dilated in middle, truncate at apex; paraglossae fan-shaped, a little produced beyond ligula; mentum with median tooth rounded at tip, epilobes narrow and not expanded apicad; microsculpture partly observed, composed of vague isodiametric meshes in apical half of clypeus and of transverse meshes laterally on frons.

Pronotum (Fig. 3) transversely subquadrate, 1.5 times as wide as long, not well convex, smooth on disc, rather coarsely and moderately punctate in basal foveae, sparsely punctate in lateral furrows, and finely or somewhat coarsely and sparsely punctate near apex; sides more or less thickly bordered, gently arcuate from apex to apical three-eighths, thence straightly and weakly convergent towards base; apex very shallowly emarginate; base about one-fourth wider than the apex, truncate in middle, weakly oblique at sides; both margins entirely bordered; apical angles widely rounded; basal angles a little larger than rectangle, narrowly to more or less widely rounded; lateral furrows relatively wide, gradually expanded basad, and fallen into basal foveae, which are ill-defined and not deepened; front transverse impression shallow, but not obsolete as the hind one; median line fine, reduced near apex and base; microsculpture largely invisible, detectable as obscure isodiametric meshes in basal foveae.

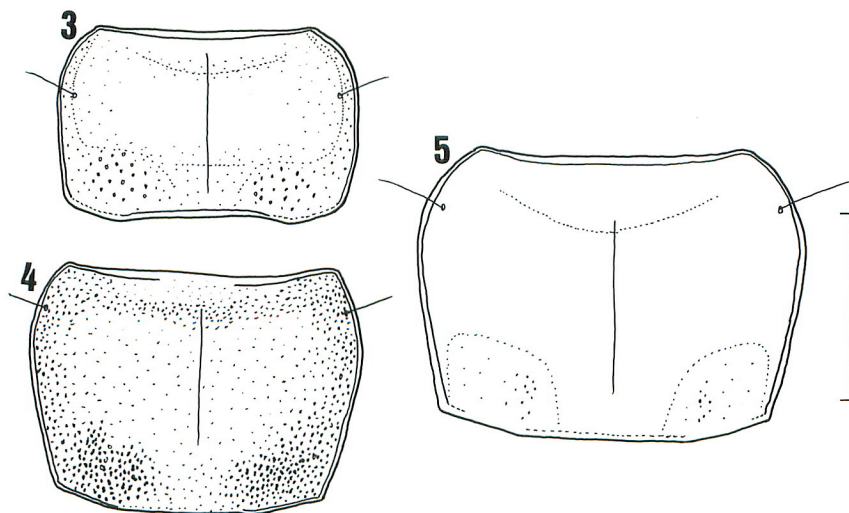
Elytra suboval, nearly 1.4 times as long as wide, uniformly and gently convex, without punc-



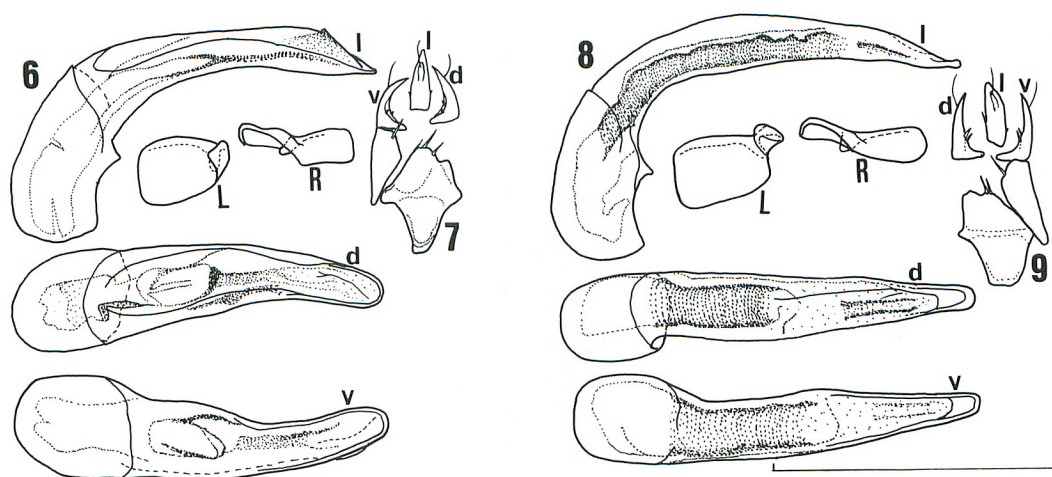
Figs. 1-2. 1, *Trichotichnus* (*Trichotichnus*) *yorimiyatakei* sp. nov.; 2, *Trichotichnus* (*Harpaloxenus*) *maculipennis* sp. nov.

tures; sides gently arcuate at humeri, with subapical sinus; apices somewhat produced, widely arcuate, narrowly rounded at tips which are narrowly separated from each other; bases shallowly emarginate, obtusely and angularly meeting with lateral margins; striae not wide, finely crenulate, scutellar striole long; intervals relatively convex, becoming more convex apicad and latero-basad, a dorsal pore on 3rd interval situated near middle; marginal series divided into two groups, fore group consisting of 8-9 umbilicate pores and hind one of 10-12 pores; microsculpture observable as vague transverse lines. Hind wings fully developed.

Ventral surface not punctate, covered with very sparse and short pubescence on 2nd and 3rd abdominal sternites; metepisternum abruptly convergent posteriad, one-third longer than wide; 6th abdominal sternite in both sexes bisetose at each side and gently arcuate at tip.



Figs. 3-5. Pronota. 3, *Trichotichnus* (*Trichotichnus*) *yorimiyatakei* sp. nov.; 4, *Trichotichnus* (*Harpaloxenus*) *maculipennis* sp. nov.; 5, *Trichotichnus* (*Pseudotrachotichnus*) *seramensis* sp. nov. Scale, 1mm.



Figs. 6-9. Genitalia. **6** and **7**, *Trichotichnus* (*Trichotichnus*) *yoriomiyatakei* sp. nov.; **8** and **9**, *Trichotichnus* (*Harpaloxenus*) *maculipennis* sp. nov.; **6** and **8**, male genitalia; **7** and **9**, female genitalia; **d**, dorsal view; **l**, lateral view; **v**, ventral view; **L**, left paramere; **R**, right paramere. Scale 1 mm.

Hind femur bisetose along hind margin; fore tibia obscurely sulcate in basal two-thirds, apico-externally unispinous in ♂ and trispinous in ♀; 1st segment of mid tarsus in ♂ without adhesive hairs, hind tarsus six-sevenths in ♂ and four-fifths in ♀ as long as the width of head, 1st segment as long as 2nd and 3rd together, 2nd a half longer than 3rd and twice 4th, claw segment bisetose along each ventral margin.

Aedeagus (Fig. 6) in lateral view gently arcuate, steeply tapered distad at apex, tip of which is not thickened, and in dorsal view curved to left and rounded at apical margin; apical orifice widely opened, inner sac without any sclerites. Stylus (Fig. 7) rather strongly curved, with a seta situated far apart from tip, with a tiny spine at basal fourth of each outer margin; basal segment unisetose apico-externally; valvifer bi- or trisetose at apex.

Length: 4.8-6.1 mm (6.1 mm in the holotype). Width: 2.1-2.8 mm (2.6 mm in the holotype).

Holotype: ♂, Solae, 12 km SE from Wahai, Seram Is., Maluku, 17.I-8.II. 1997, J. Horák leg. (preserved in OMNHc).

Paratypes: 24 ♂♂, 51 ♀♀, same data as the holotype (preserved in OMNHc and NITOc).

Remarks: This new species is similar to *Trichotichnus* (*Trichotichnus*) *philippinus* Jedlička (1936), but is distinguished from the latter by the pronotum which is not angulate at basal angles and more obscurely microsculptured and the elytra which are more deeply sinuate before apices. The species belongs to the *orientalis* group, *sense* Habu (1972).

The specific name of the new species is dedicated to Mr. Yorio Miyatake.

***Trichotichnus* (*Harpaloxenus*) *maculipennis* N. Ito, sp. nov.**

(Figs. 2, 4, 8 and 9)

Body oblong, moderately convex, shiny, coppery black, partly with greenish lustre; palpi,

mentum, 1st segments of antennae, femora, lateral margins of pronotum, 9th intervals and an oval patch before apices of elytra, and apical half of 6th abdominal sternite light brownish yellow; labrum, the remaining antennal segments, tibiae, and tarsi dark brown; gula, median part of prosternum, metepisterna, lateral part of metasternum, and blotches laterally on abdominal sternites yellowish brown.

Head large, about $\frac{4}{5}$ as wide as pronotum, moderately convex, very sparsely and minutely punctate, with fine and longitudinal rugosities on sides of clypeus and with vague and transverse ones on vertex; labrum weakly convergent anteriad, with almost truncate apex; clypeus subdepressed in apical half, shallowly emarginate at apex; clypeal suture clearly and finely carved throughout; frontal impressions arcuately divergent posteriad, comparatively deep, and reaching supraorbital grooves; interocular space wide, almost $\frac{5}{7}$ as wide as head; eyes large, not well prominent; temples short and rather steeply convergent; genuine ventral margin of eye narrowly separated from buccal fissure; antennae submoniliform, reaching basal eighth of elytra, 3rd segment as long as 4nd and $\frac{4}{5}$ longer than 2nd; mandibles short, robust, subacute at tips, terebral tooth of left mandible roundedly produced, retinacular tooth of left mandible weakly prominent and that of right one rather protuberant and rounded at tip; labial palpi slender; ligula narrow, parallel-sided, and triangularly emarginate at apex; paraglossae prolonged beyond ligula; each epilobe of mentum narrow and parallel at sides; microsculpture mostly invisible, detectable as vague isodiametric meshes only near clypeal apex.

Pronotum (Fig. 4) trapezoidal, gently convex, nearly 1.4 times as wide as long, widest at apical two-fifths, densely and rather coarsely punctate throughout except central and apical areas which are sparsely punctulate; sides arcuately convergent in front and straightly behind from the widest point, finely bordered; apex hardly emarginate, unbordered in middle; base one-tenth wider than apex, oblique at sides, and truncate in middle two-thirds which is vaguely bordered; apical angles more or less narrowly rounded; basal angles obtuse and angulate; lateral furrows narrow, weakly expanded behind and linked with shallow basal foveae; both front and hind transverse impressions vague and wide; median line fine and engraved between both impressions; microsculpture clearly observed, composed of mixtures with square and isodiametric meshes.

Elytra widely oblong, 1.4 times as long as wide, rather abruptly slant laterad and apicad, finely and sparsely punctate on disc, densely coarsened on two external intervals; sides clearly arcuate at humeri, relatively deeply sinuate subapically; apices weakly protrudent behind, narrowly separated from each other, widely rounded at margins, and blunt at sutural angles; bases shallowly emarginate; striae narrow, shallow on disc, becoming deeper towards surrounding portions, scutellar striole long; intervals weakly raised centrally, more strongly so laterad and apicad, a dorsal pore of 3rd interval situated a little behind middle along 2nd stria; marginal series interrupted in middle, composed of 8 + (9-11) umbilicate pores; microsculpture more or less clear, mostly observed as transverse lines and laterally as isodiametric meshes. Hind wings fully developed.

Ventral surface covered with short and rather dense pubescence medially on pro- and

metasterna and 2nd to 4th abdominal sternites, vaguely punctate on lateral portions of metasternum and metepisterna; metepisternum strongly contracted behind, two-thirds longer than wide; apical margin of 6th abdominal sternite bisetose in both sexes at each side and in ♂ weakly and in ♀ narrowly rounded at tip.

Hind femur bisetose along hind margin; tibiae and tarsi dorsally furnished with very short and sparse pubescence in addition to the ordinary setae; fore tibia finely and clearly sulcate lengthwise on dorsal surface, apico-externally bispinose, with terminal spur short and lanceolate; mid tarsi in ♂ biserially squamose on ventral surface of 2nd to 4th segments, hind tarsus short, two-thirds in ♂ and three-fifths of the width of head in ♀, 1st segment four-fifths as long as 2nd and 3rd together and one-third longer than 2nd, 3rd two-fifths longer than 4th, claw segment bisetose along each ventral margin.

Aedeagus (Fig. 8) relatively slender, gently arcuate, thinned at apex; apical lobe rather elongate, widely bordered, rounded at tip; inner sac not sclerotized. Stylus (Fig. 9) weakly curved outwards, with a long seta before apex, with a relatively stout spine along each external margin; basal segment unisetose apico-externally; valvifer bisetose at apex.

Length: 6.0-6.5 mm (6.0 mm in the holotype). Width: 2.4-2.8 mm (2.8 mm in the holotype).

Holotype: ♂, Solae, 12 km SE from Wahai, Seram Is., Maluku, 17.I-6.II. 1997, J. Horák leg. (preserved in OMNHc).

Paratypes: 5 ♂, 4 ♀, same data as the holotype (preserved in OMNHc and NITOc).

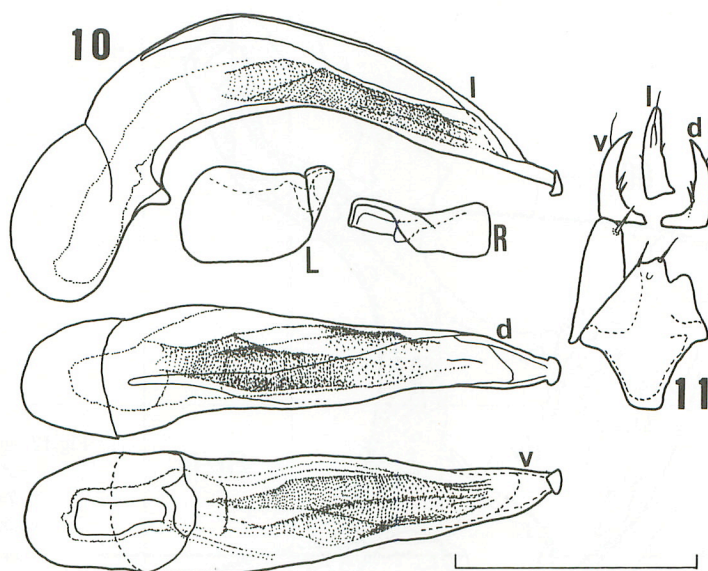
Remarks: The present new species is easily distinguished from all other species of the subgenus *Harpaloxenus* by the elytra bearing a yellow patch.

***Trichotichnus (Pseudotrichotichnus) seramensis* N. Ito, sp. nov.**

(Figs. 5, 10 and 11)

Body subovally oblong, pitchy black, shiny, with clearly iridescent lustre on elytra; palpi, antennae and legs reddish brown; labrum and mandibles dark brown.

Head wide, nearly 3/4 times as wide as pronotum, quite smooth, gently convex; apical margin of clypeus rather deeply emarginate; eyes large and not hemispherical; genuine ventral margin of eye somewhat widely separated from buccal fissure. Pronotum (Fig. 5) subquadrate, 1.4-1.5 times as wide as long, widest at apical two-fifths, quite impunctate or sparsely and finely punctate only in basal foveae; sides arcuate anteriorly and straightly convergent posteriorly from the widest point; base one-fifth wider than apex, not or brokenly bordered; basal angles obtuse and angulate; microsculpture vaguely visible only in lateral furrows and basal foveae as transverse meshes. Elytra 1.4-1.5 as long as wide, uniformly well convex, without punctures; apices comparatively produced behind, more narrowly separated from each other than *T. horni*, angulate at sutural angles; marginal series divided into two groups, the former group composed of 6-9 umbilicate pores and the hind group of 8-9 pores; microsculpture consisting of fine and vague transverse lines. Hind wings entire. Metepisternum strongly contracted behind, 1.5 times as long as wide. Sixth abdominal sternite in both sexes bisetose at each side, truncate in ♂ and clearly arcuate in ♀ at apex. Aedeagus (Fig. 10)



Figs. 10-11. Genitalia of *Trichotichnus* (*Pseudotrichotichnus*) *seramensis* sp. nov. 10, male genitalia; 11, female genitalia; d, dorsal view; l, lateral view; v, ventral view; L, left paramere; R, right paramere. Scale, 1 mm.

thick, rather strongly arcuate; apex thin, knob-shaped at tip; apical lobe subtriangular, rounded at tip; apical orifice not wide, inner sac unarmed with sclerites. Stylus (Fig. 11) slender, armed with a long spine at basal third of each outer margin; basal segment unisetose apico-externally; valvifer bisetose at apex.

Length: 7.0-7.6 mm (7.0 mm in the holotype). Width: 2.8-3.1 mm (2.9 mm in the holotype).

Holotype: ♂, Solae, 12 km SE from Wahai, Seram Is., Maluku, 17.I-6.II. 1997, J. Horák leg. (preserved in OMNHc).

Paratypes: 1 ♂, 2 ♀ ♀, same data as the holotype (preserved in NITOc and OMNHc).

Remarks: This new species is closely allied to *Trichotichnus* (*Pseudotrichotichnus*) *horni* Schauburger (1935), but the body is smaller in size, the sides of pronotum are not sinuate before base, and the sutural angles of elytra are angulate.

Trichotichnus (*Harpaloxenus*) sp.

Specimens examined: 2 ♀ ♀, Solae, 12 km SE from Wahai, Seram Is., Maluku, 17.I-6.II. 1997, J. Horák leg.

Trichotichnus (*Pseudotrichotichnus*) sp.

Specimens examined: 2 ♂ ♂, Solae, 12 km SE from Wahai, Seram Is., Maluku, 17.I-6.II. 1997, J. Horák leg.

Remarks: This species is related to the species of the subgenus from New Guinea in the

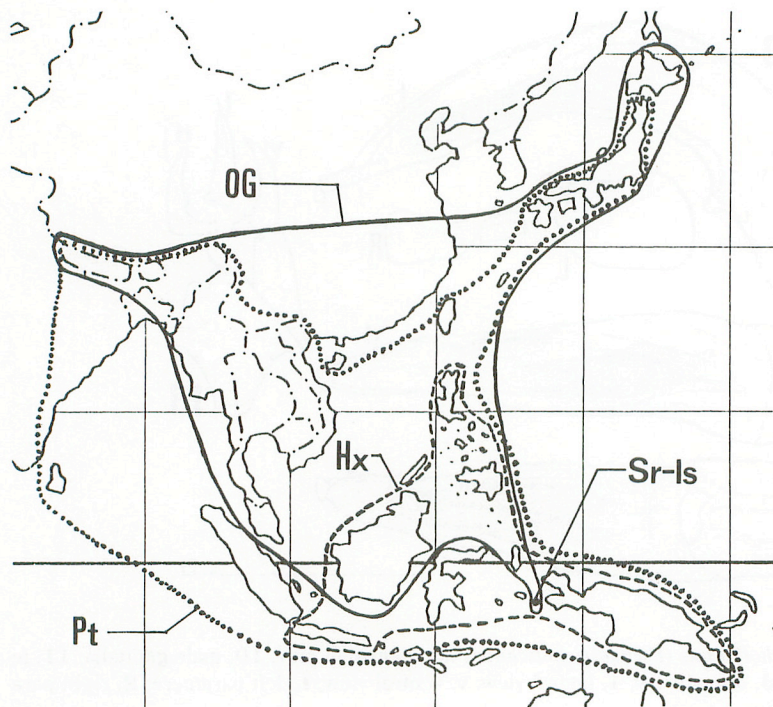


Fig.12. Map showing the distributions of the genus *Trichotichnus*. **Pt**, the subgenus *Pseudotrichotichnus*; **Hx**, subgenus *Harpaloxenus*; **OG**, the orientalis group of the subgenus *Trichotichnus*; **Sr-Is**, Seram Is.

shape and lustre of the body and the characteristics of the aedeagus.

Distribution range of subgenera of *Trichotichnus*

As mentioned above, the genus *Trichotichnus* Morawitz (1863) in Seram is composed of the species of the subgenera *Pseudotrichotichnus* Habu (1972) and *Harpaloxenus* Schaubberger (1935), and of the orientalis group of the subgenus *Trichotichnus* Morawitz (1863). Here I present a map of hitherto known distribution range of the three subgenera of *Trichotichnus* (Fig. 12). These ranges do not agree with any distribution pattern of this area. Further researches are needed to clear the distribution pattern of this genus.

Acknowledgments

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